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Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

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Tank fixed, Discovery rolls out for STS-133 launch

By Frank Ochoa-Gonzales
Spaceport News

As New York Yankee great Yogi Berra once said: "It's déjà vu all over again."

On the final night of January 2011, in front of Kennedy workers, their friends and family, space shuttle Discovery trekked its way from the Vehicle Assembly Building to Launch Pad 39A.

It was the second time Discovery rolled out for its STS-133 mission to the International Space Station, which now is targeted to launch Feb. 24 at 4:50 p.m. EST

"Anytime we have a long flow of challenges, which we've had for STS-133, that makes the final outcome even sweeter," said Stephanie Stilson, Discovery's NASA flow director for the past 11 missions. So when we finally get to the launch we really appreciate the work that has happened and all the long hours our team has put in."

The first rollout came last year in late September when Discovery was supposed to make its last flight to the space station in November.

"The entire team was anxious to get back to the launch pad and get the entire stack ready to launch," Stilson said. "It's a good exciting time and it's been a long time waiting."

NASA/Kim Shiflett

Xenon lights illuminate space shuttle Discovery as it makes its nighttime trek, known as "rollout," from the Vehicle Assembly Building to Launch Pad 39A at Kennedy Space Center on Jan. 31.

For Discovery's flow team, the xenon lights not only highlighted the STS-133 stack, but the many hours of work put in to allow the shuttle to make its final trip to the launch pad.

But it hasn't been easy.

On launch day Nov. 5, two

See **ROLLOUT**, Page 2

Follow along on launch day

NASA's Launch Blog is set to begin about five hours prior to liftoff, and will highlight the countdown milestones from the Launch Control Center's Firing Room 3 as the six STS-133 astronauts prepare to embark on their 11-day journey to the International Space Station. They'll take with them the Permanent Multipurpose Module, filled with equipment and critical spare components, and Robonaut 2 (R2), the first humanlike robot in space.

http://www.nasa.gov/mission_pages/shuttle/launch/launch_blog.html

Inside this issue . . .

Ceremony pays homage to Challenger crew

By Linda Herridge
Spaceport News

On the eve of the 25th anniversary of the space shuttle Challenger accident, Kennedy Space Center observed NASA's Day of Remembrance, Jan. 27, with a wreath-laying ceremony at the KSC Visitor Complex Space Mirror Memorial.

The Day of Remembrance honors members of the NASA family who lost their lives while furthering the cause of exploration and discovery, including the astronaut crews of Apollo 1 and shuttles Challenger and Columbia.

Kennedy's Center Director Bob Cabana, Deputy Center Director Janet Petro, and United Space Alliance's Associate Program Manager for Solid Rocket Boosters Roger Elliott placed the wreath, inscribed with the words, "Remembering our Fallen Heroes," at the memorial, and observed a moment of silence.

A statement issued by President Barack Obama read in part, "Today, on this Day of Remembrance when NASA reflects on the mighty sacrifices made to push those frontiers, America's space agency is working to achieve even greater goals. Through triumph and tragedy, each of us has benefited from their courage and devotion, and we honor their memory by dedicating ourselves to a better tomorrow. Despite the challenges before us today, let us commit ourselves and continue their valiant journey toward a more vibrant and secure future."

Before a wreath-laying ceremony at Arlington National Cemetery, NASA Administrator Charlie Bolden also issued a statement that read in part, "The legacy of those who have perished is present every day in our work and inspires generations of new space explorers. Every day, with each new challenge we overcome and every discovery we make, we honor these remarkable men and women. Please join me in working to fulfill their dreams for the future."

Cabana shared similar sentiments: "I think it's really important that every year we take a few moments of our day, on this Day of Remembrance, to remember those that paid the ultimate sacrifice in the quest to explore space," Cabana said. "The loss of their lives would be meaningless if we did not continue. I think it's extremely important to continue our quest to explore and expand our knowledge."

On Jan. 28, The Astronauts Memorial Foundation's remembrance service at the Space Mirror Memorial was attended by NASA officials, dignitaries, families of the fallen, Kennedy workers and the general public.

Moderated by the foundation's President Stephen Feldman, the guest speakers included NASA Associate Administrator for Space Operations William Gerstenmaier; Dr. June Scobee Rodgers, widow of STS-51L Commander Dick Scobee and founding chair of the Challenger Center for Space Science Education; Cabana; chairman of The Astronauts Memorial Foundation and former astronaut Mike McCulley; and Rick Soria, 2009 Alan Shepard Technology in Education Award winner.

Scobee Rodgers said, "We're not a nation of naysayers, we're a nation of believers. We're innovators and problem solvers. We're risk-takers with a pioneering spirit. We as a nation are indebted to the space pioneers who blazed a trail of exploration and discovery."

Cabana said, "We learned many lessons from the loss of Challenger. And the vehicle that returned to flight two-and-a-half years later may have looked the same, but had hundreds of changes to make it safer and more reliable."

"It's not easy to look back and reflect," Gerstenmaier said. "We learned that little things that seem harmless can become catastrophic events. The human spaceflight team has learned tremendous lessons from these events.

"We will continue to strive to be better. To explore, to expand our knowledge of our universe and to reach beyond," Cabana said.

At the conclusion of the memorial, Scobee Rodgers and Gerstenmaier placed a wreath below the names of the Challenger crew.

NASA/Kim Shiflett

Dr. June Scobee Rodgers, the founding chair of the Challenger Center for Space Science Education, honors her late-husband, space shuttle Challenger's STS-51L Commander Dick Scobee, on Jan. 28. Challenger broke apart over the Atlantic Ocean 73 seconds into flight 25 years ago.

Remembering NASA's pioneers

Apollo 1
Virgil "Gus" Grissom
Edward White
Roger Chaffee

Challenger
Francis "Dick" Scobee
Michael Smith
Judith Resnik
Ellison Onizuka
Ronald McNair
Gregory Jarvis
S. Christa McAuliffe

Columbia
Rick Husband
William McCool
Michael Anderson
Kalpana Chawla
David Brown
Laurel Clark
Ilan Ramon

From **ROLLOUT**, Page 1

problems surfaced: A problem with the ground umbilical carrier plate (GUCP) and a crack in the orange foam near the top of the external fuel tank's midsection. Under the foam, small cracks on the top of two stringers were found.

"Anytime we have a vehicle safety issue, we always try to do everything we can do to make it as safe as possible," said Wayne Bingham, United Space Alliance (USA) Discovery flow manager.

After an instrumented tanking test Dec. 17, the orbiter was rolled back into the Vehicle Assembly Building on Dec. 21.

Additional investigations were performed by utilizing an X-ray-type machine, called a backscatter device, showed small cracks on three stringers on the opposite side of the external tank. Stringers are support beams that make up the tank's corrugated intertank portion.

"The program determined to modify the tank stringers and make them more robust," said Jim Taylor, integrated vehicle flow manager with USA.

To fix the tank, technicians worked around the clock to bolster the stringers with small metal strips, called radius blocks, to strengthen and fasten their tips during tanking and ultimately, the climb to orbit.

Engineers evaluated another type X-ray scan called computed radiography images of the 108 stringers. Five cracked stringers were fixed with double-thick stringer tips and radius blocks; 94 more stringers were reinforced with radius blocks; eight stringers were not modified because they were made of a different batch of aluminum-lithium alloy not susceptible to stress-relief fractures. One stringer was not modified because of where it was located.

"The last three flights were supposed to be easy," said Taylor. "But we continue to learn about the vehicle and ways to make it safe to the end of the Space Shuttle Program."

According to Stilson, the team has remained very focused on safety.

"The team has been supportive of the decisions being made and have done everything they possibly could to ensure they completed all the work as quickly and as safely as possible," Stilson said. "We wanted to make sure we did it right and that when we rolled back out to the launch pad we were good to go."

Taurus XL ready to launch Glory climate spacecraft

By Steven Siceloff
Spaceport News

The Glory spacecraft and its Taurus XL launch vehicle are coming together at Vandenberg Air Force Base in California as NASA gets ready to launch its first Launch Services Program (LSP) mission of 2011.

Researchers are looking for more puzzle pieces to fill out the picture of Earth's climate and Glory was designed to give them the pieces relating to the role tiny particles known as aerosols play in the planet's weather. The spacecraft, about the size of a household refrigerator, also is equipped with an instrument to measure the sun's impact on Earth's conditions. Measuring the solar irradiance will help scientists determine the impact solar fluctuations have on the average rising global temperatures. Glory is scheduled to lift off Feb. 23 at 5:09 a.m. EST.

"The Glory satellite will help us understand the interaction of what's called aerosols in our environment," said Chuong Nguyen, LSP's mission integration manager for Glory.

The particles Glory will measure are small enough to float in the atmosphere and affect weather conditions by either absorbing sunlight or reflecting it. The particles also can affect rain patterns by seeding clouds and have other effects.

The Glory mission also will find out how long-lasting the effects for aerosols are and how far their effects reach.

The effects of some aerosols are limited to those parts of the world that generate them. For example, cities in developing nations often produce the most "black carbon," or soot, and it is in those areas that the effects are seen most dramatically, sometimes even in the form of health problems.

However, other aerosols including dust from the Sahara desert, reach high enough into the air that they are transported across the oceans. In the case of the Sahara, its dust has been seen in the Caribbean.

While the spacecraft will get significant attention, many eyes will be on the Taurus XL rocket that will lift Glory. The four-stage, solid-fueled rocket was last used in February 2009 to launch the Orbiting Carbon Observatory. However, the payload fairing protecting the spacecraft during the early part of launch did not separate and the spacecraft never reached orbit.

"Glory is going to do some fantastic stuff as far as mapping out aerosols in the atmosphere, but it's also a groundbreaker in that this is the first flight after a failure of the Taurus XL vehicle," said Omar Baez, launch director for the Glory mission. "So we're excited to be doing this and Glory just happens to be the science that we're taking up with us this time."

Compared with other rockets that have launched many hundreds of times, the Taurus XL is quite young and Baez said the trouble with the last launch is part of any new system's growing pains.

"We've had a lot of work put into this vehicle," Baez said. "We'll take out those problems that we had with the failure."

Two review boards were established to find the cause of the failure, one by NASA and one by the rocket's maker, Orbital Sciences. When those were complete, the launch team moved ahead with changes and preparations for the Glory mission.

"There's physically been people that have been working this one item for two years," Baez said.

Glory is launching from the California coast so it can go into a sun-synchronous orbit to scan almost all of the Earth's surface as part of the "A-Train" of Earth-observation satellites already in orbit.

Together, Glory, the other spacecraft already in orbit and a future mission called the Orbiting Carbon Observatory-2, which is the replacement spacecraft for the original OCO, are expected to give the most complete picture to date of Earth's climate and what makes it change.

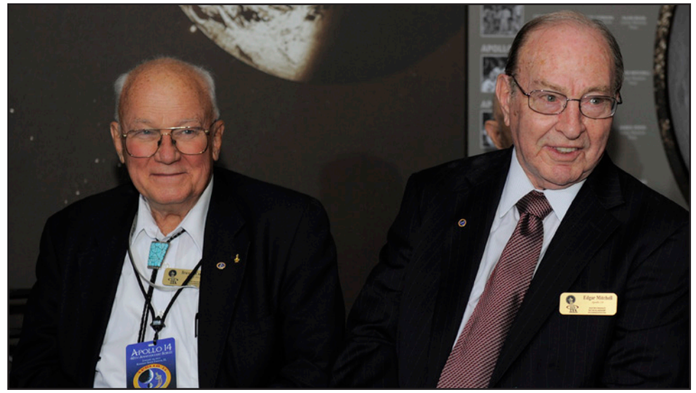
NASA/Roy Allison, VAFB

On Jan. 21, the Stage 0/1 interstage is attached to Stage 0 of the four-stage Taurus XL rocket that will carry NASA's Glory spacecraft into low Earth orbit from Space Launch Complex 576-E at Vandenberg Air Force Base in California.

NASA/Dan Liberotti, VAFB

At the Astrotech payload processing facility at Vandenberg Air Force Base in California, technicians configure the equipment for the fueling of the Glory spacecraft, seen in the background wrapped in a protective covering, with its attitude control propellant Jan. 23.

Scenes Around Kennedy Space Center



NASA/Kim Shiflett

Apollo 14 Capcom Bruce McCandless, left, and Apollo 14 Lunar Module Pilot Edgar Mitchell take part in the Apollo 14 Anniversary Soirée at the Kennedy Space Center Visitor Complex's Saturn V Center on Jan. 29. The celebration was hosted by the Astronaut Scholarship Foundation. Apollo 14 landed on the lunar surface 40 years ago on Feb. 5, 1971.

Electrical Maintenance Facility Hosts Ribbon-Cutting Ceremony

Kennedy's new, 18,500-square-foot Electrical Maintenance Facility (EMF) on Contractors Road in the Launch Complex 39 area opened for business Feb. 8.

The facility will provide new and renovated space for maintenance shops, offices, and equipment and material storage in support of the electrical maintenance functions at Kennedy.

Construction and renovation of the energy-efficient facility began in September 2009.

The EMF, designed by Jones Edmunds and Associates and constructed by H.W. Davis Construction, is projected to receive Gold certification under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system.

Below: Participating in the ribbon-cutting ceremony are, from left, Director of Kennedy's Center Operations Mike Benik, NASA Construction of Facility Project Manager Nick Rivieccio, and Kennedy Center Director Bob Cabana.

NASA/Troy Cryder

NASA/Jack Pfaller

Space shuttle Atlantis goes through a routine landing gear test in Kennedy's Orbiter Processing Facility-1 on Jan. 25. Technicians are checking to make sure the shuttle's wheels, brakes, elevons and body flap function properly. Atlantis is being prepared for the STS-135 mission, which will carry the Raffaello multi-purpose logistics module packed with supplies, logistics and spare parts to the International Space Station. STS-135 is targeted to launch June 28, and will be the last mission for the Space Shuttle Program.

Photo courtesy of Al Jenkins

For NASA

For NASA

Retirement Celebrations

From top: Napoleon Carroll, special assistant to Kennedy's deputy director, right, celebrates his retirement on Jan. 7 after 37 years of federal service.

Bill Potteiger, Technical Integration Branch chief of the Launch Vehicle Processing Directorate's Project Control Office at Kennedy, right, accepts a space shuttle photo, signed by co-workers and friends, during his retirement celebration Jan. 27. At left is George Jacobs, the directorate's Project Control Office division chief.

David Alonso, a senior advisor for Kennedy's Institutional Management for the Associate Director for Business Operations, left, celebrates his retirement with retired Kennedy Associate Administrator for Business Operations Jim Hattaway on Jan. 14.

NASA/Jack Pfaller

Crews assess a break in a natural gas line in the area north of Kennedy's Multi-Function Facility (MFF) on Feb. 2, after it was inadvertently struck by a backhoe.

NASA Railroad played vital role in shuttle booster haul

By Anna Heiney
Spaceport News

For nearly three decades, the NASA Railroad at Kennedy Space Center kept the space shuttle's solid rocket boosters on track.

Getting the 12-foot-wide, 150-ton segments to the launch site was possible only by rail. The segments were loaded by manufacturer ATK at a plant in Promontory, Utah, then shipped in customized train cars on a seven-day trip to Kennedy.

The final set of space shuttle booster segments arrived in May 2010 for space shuttle Atlantis' targeted STS-135 mission to the International Space Station.

"The railroad is a lifeline in and out of this center," said Chris Bryant, a locomotive engineer and mechanic with URS Corp. Bryant is one of 11 team members in the URS railroad shop who operate and maintain the railroad's cars, tracks and facilities.

At the Wilson's Corners junction at the northern end of the space center, the NASA Railroad splits into two nine-mile stretches of track. Kennedy's mainline runs south, past the Vehicle Assembly Building and other Launch Complex 39 facilities before reaching the center's Industrial Area. To the east, a second line of track extends to the Cape Canaveral Air Force Station.

Each incoming shuttle-booster segment rested on a cradle in a custom-built railcar. A clamshell-like cover, hinged at the top, protected the hardware throughout the journey. Fully loaded, a single segment car weighed 513,000 pounds.

The cross-country route involved commercial rail companies such as Union Pacific, Kansas City Southern, Norfolk Southern, CSX and Florida East Coast Railway (FEC). FEC handled the final leg of the trip, pulling the hazardous cargo into NASA's Jay Jay railroad yard north of Titusville, Fla.

That's when the Kennedy railroad crew took charge, starting with a thorough inspection.

"You want to make sure you're not going to drag anything in that's going to cause a hazard to the commodity," explained Will Eriksen, a three-decade veteran of Kennedy's railroad operation.

Although the train had to traverse a drawbridge spanning the Indian River, the bridge is not strong enough to hold a train with so many heavy cars. The solution: Empty "spacer" cars were added between the segments to distribute the weight over the individual spans of the bridge.

The NASA locomotive pulled the train across the river to Wilson Yard, just west of Wilson's Corners junction, where the spacer cars were removed.

Bryant said once completed, all the cars were gathered and taken to Suspect Siding, which is an isolated staging area on the northeast side of the Shuttle Landing Facility. The segments remained there until ATK technicians were ready for them in the booster Rotation, Processing and Surge Facility, where they were rotated to vertical and prepared for stacking.

Although the Kennedy rails are built to withstand mainline track speeds of 60 mph, when the booster segments arrived, the weight and the danger involved required more caution.

"When we're hauling in, we're hauling 4 to 5 million pounds of explosives," Bryant points out. "Through the crossings, too. It's not something to sneeze about, you know."

Kennedy's rail system was activated in 1963 when FEC added a 7.5-mile connection from its mainline across the Indian River to the space center. At that time, the spaceport was in the midst of a construction boom as facilities were built for the Apollo Program, and the railroad provided a means of hauling heavy building materials into the center.

But by the time the Space Shuttle Program was beginning, the railroad was in sad shape after years of exposure to the salt air and moist, tropical climate. The wood crossties were rotting, rust had eaten away at the hardware, and the rail itself needed to be strengthened. FEC was contracted to upgrade the system.

NASA bought that portion of the railroad line from FEC in 1983, two years after the shuttle began flying, and today the skilled Kennedy crew maintains the system.

"No safety issues and no real problems ever, since day one," said URS Lead Mechanic Mike Stephens. "It's been a great working operational feat, that's for sure."

In addition to the shuttle boosters, the NASA Railroad has carried nitrogen tetroxide, an oxidizer used as rocket propellant; Air Force Titan rockets; Navy Trident missiles; and the shuttle-based booster segments for the Ares I-X flight test.

NASA/Jim Grossmann

A NASA Railroad mechanic checks out the brakes on a Union Pacific rail car hauling one of the last space shuttle solid rocket booster segments on May 28, 2010.

NASA/Jack Pfaller

The NASA Railroad train hauls an Ares I-X segment to the Rotation, Processing and Surge Facility at Kennedy Space Center on March 20, 2009.

NASA/Kim Shiflett

The NASA Railroad train transports the last space shuttle solid rocket booster segments over the Indian River on the 13-mile trip from the Jay Jay Rail Yard in Titusville, Fla., to Kennedy Space Center on May 28, 2010.

Remembering Our Heritage

MPLMs' mission success a total team effort

By Kay Grinter
Reference Librarian

Ten years ago, the third and final multi-purpose logistics module was delivered to Kennedy Space Center, a happy event for the NASA family.

Donatello, the newest of three nearly identical modules, joined its "siblings" Feb. 1, 2001. The oldest and first off the assembly line, Leonardo, had been in residence at Kennedy since August 1998, with Raffaello following close behind in August 1999.

All three were manufactured and assembled for the Italian Space Agency (ASI) at the Alenia Aerospazio factory in Turin, Italy. Ownership of the modules was then transferred to the U.S. in exchange for Italian access to U.S. research time on the International Space Station (ISS).

The modules were named by ASI after some great Italian minds, suggesting high aspirations for the triplets.

The first, Leonardo, was named for Leonardo da Vinci; the middle, Raffaello, for the artist Raffaello Sanzio; and the last, Donatello, for sculptor, Donato di Niccolo i Betto Bardi.

Not unlike astronauts, their preordained purpose in life was to fly in space. These unpiloted, reusable pressurized modules were designed to carry equipment, experiments and supplies to and from the ISS aboard the space shuttle.

NASA file/2005

On March 8, 2005, a Space Station Processing Facility worker stands by as the Rack Insertion Device moves the Human Research Facility-2 (HRF-2) science rack into the multi-purpose logistics module Raffaello for flight on space shuttle Discovery's Return to Flight mission, STS-114.

Unlike the shuttles, there is no flow director for each module. The mission manager for each flight on which an MPLM is scheduled oversees the processing of the module thereby acting as its guardian.

The modules reside and are prepared for flight in the Space Station Processing Facility (SSPF). They are installed in the shuttles vertically at the pad for launch.

Francesco Santoro, ASI/ALTEC Liaison Office manager at Kennedy, was in Italy for Leonardo's assembly but moved to Florida to prepare for its arrival. Santoro and his colleague, Giuseppe Mancuso, support all MPLM processing and operations.

"The Advanced Logistics Technology Engineering Center, or ALTEC, in Turin, Italy, is under contract to ASI to provide sustaining engineering and logistics, and supports NASA in the operations and utilization of the the MPLMs for the entire ISS life," Santoro explained.

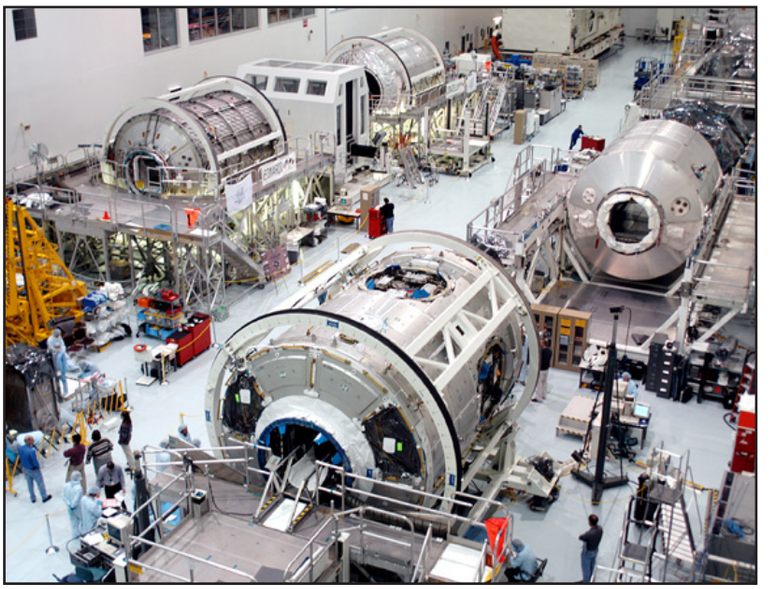
Leonardo has flown seven missions, beginning with STS-102 in 2001, and Raffaello, three. Donatello has never flown.

"Donatello is kept in flight status configuration, maintained, and in some cases has been used," Santoro said, "to provide spare parts for the other modules."

NASA's Glenn Chin represented Kennedy's Space Station Hardware Integration Office in Italy for the assembly of all three MPLMs, and was a member of the acceptance team and mission manager for Leonardo's first three missions.

"There was a huge learning curve processing Leonardo the first time," Chin said, "but by STS-111, the procedures were routine."

Michael Kinslow, Boeing's payload flow manager since 2005, explained: "NASA Design Engineering created a unique piece of equipment to process MPLMs: the Rack Insertion Device. Its 45-foot telescoping arm has end effectors which can rotate in any axis and lift cargo and system racks weighing up to 2,000 pounds. It is the only one of its kind in the world."



NASA file/2004

All three multi-purpose logistics modules (MPLMs) are on the floor of Kennedy Space Center's Space Station Processing Facility on Feb. 18, 2004. Leonardo is at front left, and Donatello is behind it. Raffaello is at front right. The MPLMs were built by the Italian Space Agency to serve as reusable logistics carriers and the primary delivery system to resupply and return International Space Station cargo requiring a pressurized environment.

Like human children, the modules have occasionally been "held back," although due to no fault of their own.

"Launch of STS-121 slipped because of issues with foam shedding from the external tank on the Return to Flight mission (STS-114)," said Deborah Hahn, NASA mission manager for Leonardo's STS-121 flight. "We had to destow and restow the pressurized cargo in Leonardo because of the delay."

Scott Higginbotham has served as NASA mission manager for 20 shuttle flights, including the upcoming STS-133 mission, making him Leonardo's guardian during its final processing flow.

"We are sad that Leonardo is leaving but excited that it's not going to a museum, but to the ISS," Higginbotham said.

Robonaut 2, the station's first humanlike robot, is one of its cargo passengers.

"Preparing an MPLM for flight is never mundane," Higginbotham said. "The cargo and experiments are different every flight, requiring new rack configurations."

Leonardo has been modified into the Permanent Multipurpose Module, or PMM, to allow it to remain on the ISS to provide additional storage.

"(My team and I) worked directly with that Italian team who came here to Florida to modify Leonardo," Higginbotham said. "Although we had a compressed timeline, they did wonderful work."

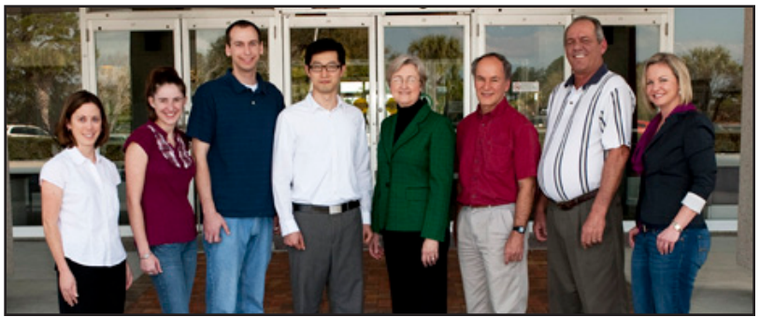
A welcoming party is already planned for Leonardo's arrival on the station.

"The entire U.S.-Italian team signed a banner which, after Leonardo is berthed, will be brought out and hung in the station," Higginbotham revealed. "The astronauts will take pictures, commemorating the event, and the banner will be brought back and put on display in Italy."

The two modules remaining on Earth could potentially support future NASA programs.

Bill Dowdell, deputy director of International Space Station and Spacecraft Processing, projected: "If STS-135 is funded, Raffaello is manifested to fly again, and if NASA's follow-on program to the space shuttle needs a proven cargo carrier, even Donatello may yet get the chance."

NASA Employees of the Month: February



NASA/ Tom Farrar

Employees for the month of February are, from left, Kristin Kelley, Safety and Mission Assurance; Christine Du Quesne, Center Operations; Matthew Zbin, Information Technology and Communications Services; Zijian (Steven) Xu, Procurement Office; Karen Childree, Launch Services Program; Raymond Wheeler, Engineering Directorate; Andrew Swift (Employee of the Quarter) Launch Integration Office; and Jennifer Tharpe, Launch Vehicle Processing Directorate. Not pictured, are Dina Davila, Education and External Relations; Telita De Souza, Chief Financial Office; Amy Houts Gilfriche, Constellation Project Office; and Christopher Broadaway, Engineering Directorate.

Did you take part in NASA's Mercury Program?

People who worked in NASA's Mercury Program and during the early years of the space program are encouraged to indicate their interest in attending a 50th anniversary celebration by calling 321-867-1000 or writing to Alan Shepard 50th Anniversary, c/o Jane Mosconi, Mail Code EX-P, NASA, Kennedy Space Center, FL 32899. Include your name, address, phone number, e-mail address and role you played in the program. If the phone number indicates it is full, call back later. The mailbox only accepts 30 messages at a time.

NASA seeks volunteers for mentors, colleagues

NASA's External Relations Education Programs and University Research Division seeks volunteers to share their expertise as mentors/colleagues for undergraduate students, graduate students and postdoctoral scholars for the summer 2011 session. The deadline for submission of opportunities is Feb. 15. Go to **http://intern.nasa.gov** to create a mentor profile and an opportunity for students. For more information, contact Benita Desuza by e-mail at **KSC-Education-Office@mail.nasa.gov** or call 321-867-3671.

Looking up and ahead . . .

Feb. 23	Launch/VAFB: Taurus, Glory; 5:09:43 a.m. EST
Targeted for Feb. 24	Launch/KSC: Discovery, STS-133; 4:50 p.m. EST
No Earlier Than March 4	Launch/CCAFS: Atlas V, OTV 2; TBD
No Earlier Than March 11	Launch/CCAFS: Delta IV, NROL-27; TBD
Targeted for April 19	Launch/KSC: Endeavour, STS-134; 7:48 p.m. EDT
No Earlier Than April 30	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
No Earlier Than June 23	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
No Earlier Than June 9	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
Targeted for June 28	Launch/KSC: Atlantis, STS-135; 3:48 p.m. EDT
No Earlier Than July 15	Launch/CCAFS: SpaceX Falcon 9, Dragon C2; TBD

WORD ON THE STREET

If you could catch a ride aboard the NASA Railroad train, where would you go and why?

"I would go to middle America to promote NASA's vision to all those youngsters who want to travel to space. They don't get to see what we see here in Florida."

Josie Burnett,
with NASA

"I'd like to go sightseeing up the Pacific Coast."

Tom Batchelder,
with Boeing Space Operations Co.

"I'd take my daughter, Kristen, skiing in Colorado."

Ken Koby,
with Boeing Space Operations Co.

"I would put my Prius on board and travel to Utah . . . to explore to the Canyonlands."

Kevin Gill,
with Indyne Inc.

"I would take my co-workers with me to Washington, D.C., to help promote our future."

Brenda Heeke,
with Boeing Space Operations Co.

John F. Kennedy Space Center

Spaceport News

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